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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,823	11/01/2000	Michael A. Davis	712-002-104	4186

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EXAMINER

LYONS, MICHAEL A

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/703,823

Applicant(s)

DAVIS ET AL.

Examiner

Michael A. Lyons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kringlebotn et al (6,097,487) in view of Farhadiroushan (5,754,293).

With regard to claim 1, Kringlebotn discloses a broadband light source 1 and a Bragg grating 5 with a known reference wavelength. The figure only shows grating 5 to be a single grating; however, Kringlebotn discloses both in his abstract and in column 4, lines 49-50 of the specification that the reference Bragg grating 5 is "at least one FBG . . . with a known wavelength providing an accurate wavelength reference". This comment still leaves doubt as to whether each of the multiple Bragg gratings in an etalon structure would actually have the same known wavelength.

Farhadiroushan teaches (Fig. 11) a device whereby pairs of in-line fiber gratings 20, each grating having the same wavelength, are used to select and reflect a certain group of wavelengths. While these Bragg gratings are not chirped, the practice of chirping a Bragg grating for the purpose of allowing a broader spectrum of wavelengths to pass through is well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the single reference Bragg grating of Kringlebotn a Bragg grating etalon as per Farhadiroushan in addition to chirping the Bragg grating to facilitate the passage of a spectrum of wavelengths through the etalon as per the claimed invention.

With regard to claim 16, the broadband light source and Bragg grating etalon are discussed above. In addition, the Bragg gratings of Farhadiroushan may be contained in optical fiber waveguides,

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as the specification states “the wavelength filter means may be a wavelength selective grating inside an optical fib[er] waveguide” (Col. 3, lines 10-11).

As for claim 2, the line “at least one fibre Bragg grating” can be read to mean a pair of gratings.

As for claims 3-4, the spacing of the chirped gratings, along with the appropriate results, are well known in the art.

As for claim 5, Kringlebotn discloses an optical filter 8.

As for claim 6, Kringlebotn shows an optical band pass filter 9.

As for claim 7, while a Fabry-Perot filter 8 is disclosed, a Bragg grating can be substituted for the same effect.

As for claim 8, making the Bragg grating long-period is well known.

As for claim 9, the Fabry-Perot filter disclosed has a “fixed and known free spectral range” (lines 10-11, abstract), making it a selective dielectric filter.

As for claim 10, while the Fabry-Perot filter is disclosed, a Bragg grating can be substituted for the same effect.

As for claim 11, Kringlebotn shows an optical band pass filter 9.

As for claim 12, Kringlebotn discloses an optical filter 8.

As for claims 13 and 14, the device discloses optical couplers 3 and 4.

As for claim 15, while the Fabry-Perot filter is disclosed, a Bragg grating can be substituted for the same effect.

As for claim 17, having a desired filter profile with a precise set of reference signals is well known.

As for claims 18-20, the spacing of the chirped gratings, along with the appropriate results, are well known in the art. Additionally, all broadband sources have spectrums, and chirped Bragg grating etalons are designed to pass certain wavelengths of light while reflecting others.

Response to Arguments

Applicants' arguments filed May 15, 2003 have been fully considered but they are not persuasive. The thrust of the applicants' is a detailed description of why the combination of Kringlebotn et al in view of Farhadiroushan fails to accurately represent the claimed invention. Essentially, the substitution of the "in-line fiber Bragg grating pairs" (page 11, paragraph 2 of applicants' response), such as depicted by element 10 of Figure 1, for the reference grating 5 in Figure 1 of Kringlebotn is wrong, as there is no motivation, according to the applicants', for such a substitution. Additionally, neither Kringlebotn nor Farhadiroushan disclose the use of chirped Bragg gratings leading to a chirped Bragg grating etalon.

Motivation does exist, however, for the combination and substitution of the Kringlebotn and Farhadiroushan devices. From the above rejection: "Kringlebotn discloses both in his abstract and in column 4, lines 49-50 of the specification that the reference Bragg grating 5 is 'at least one FBG . . . with a known wavelength providing an accurate wavelength reference'". This statement provides the motivation for modifying the single reference grating 5 depicted in Figure 1, as "at least one FBG" can mean just one, or mean two or more. It should be noted that the remaining set of Bragg gratings 6 is not being ignored; rather, the issue at hand is the reference grating, since the claims are only directed toward providing optical reference signals, such as the reference grating 5.

Since the statement of Kringlebotn above is not explicit in its reference to the exact number of reference gratings are present, the device of Farhadiroushan is turned to. As stated by the applicant, Farhadiroushan contains "in-line fiber Bragg grating pairs", essentially, a fiber Bragg grating etalon. While Farhadiroushan's device is a sensing device, the fiber Bragg grating etalon "includes a wavelength filter for selecting a band of wavelengths" (abstract, lines 3-4), with each etalon responsible for selecting a specific wavelength. As the etalon serves the purpose of selecting a specific wavelength, much like the reference grating of Kringlebotn is responsible for selecting a specific reference wavelength, the combination is valid.

Finally, while neither Kringlebotn nor Farhadiroushan uses chirped Bragg gratings or chirped Bragg grating etalons, the practice of chirping Bragg gratings is well known. Chirped Bragg gratings and their uses are disclosed and described in US Pat. No. 5,499,134 to Galvanauskas et al, making them well known. In addition, in the abstract, lines 5-8, states the following: "When used in chirped pulse amplification systems instead of bulk diffraction grating stretchers and compressors, Bragg gratings offer unprecedented compactness, robustness, and system efficiency". This statement, along with the abstract as a whole, explain the advantages of using a chirped Bragg grating, making the chirping of a normal Bragg grating etalon not only well known, but beneficial to the system as a whole as well.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 703-305-1933. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on 703-308-4877. The fax phone numbers for the organization where this

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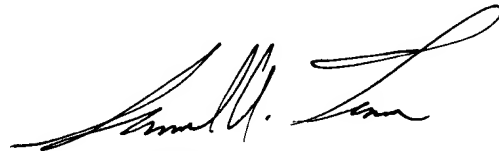
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application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0935.

MAL
July 21, 2003

A handwritten signature in black ink, appearing to read 'Samuel A. Turner', with a stylized flourish at the end.

Samuel A. Turner
Primary Examiner